

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Yong Liu et al.

Application No.: filed Herewith

Parent Appln. Group No.: 1756

Filed: 10/14/2003

Parent Appln. Examiner: Stephen D. Rosasco

For: "System And Method For Correcting 3D Effects In An Alternating Phase-Shifting Mask"

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Date: October 14, 2003

**INFORMATION DISCLOSURE STATEMENT**

**List of Sections Forming Part of This Information Disclosure Statement**

The following sections are being submitted for this Information Disclosure Statement:

1. Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted

**Section 1. Identification of Prior Application in Which Listed Information Was Already Cited and for Which No Copies Are Submitted or Need Be Submitted**

This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior application Serial No.: 09/974,507, filed on October 9, 2001, now allowed (U.S. Patent Number not yet known).

Copies of the documents listed on the accompanying Form PTO-1449 (22 pages) that are not enclosed were previously submitted in Application No. 09/974,507, from which this Application claims an earlier effective filing date.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. If form PTO-1449 is enclosed, the Examiner is requested to initial and return it in accordance with MPEP § 609.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56.

This statement qualifies under 37 C.F.R. § 1.97, subsection (b) because (check all that apply):

- (1) It is being filed within 3 months of the application filing date and is other than a continued prosecution application under § 1.53(d)  
-- OR --
- (2) It is being filed within 3 months of entry of a national stage  
-- OR --
- (3) It is being filed before the mail date of the first Office Action on the merits.  
-- OR --
- (4) It is being filed before the mailing of a first Office Action after the filing of a request for continued examination under § 1.114

SN: filed herewith

37 C.F.R. § 1.97(c). If this statement is being filed after the period specified in § 1.97(b), but before the mailing date of the earlier of a final office action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application, then:

a certification as specified in § 1.97(e) is provided below; or

a fee of \$180.00 as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.

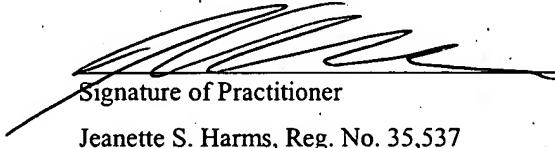
37 C.F.R. § 1.97(d). If this statement is being filed after the period specified in § 1.97(c), but on or before payment of the issue fee, then:

A. a certification as specified in § 1.97(e) is completed below; and

B. a fee of \$180.00 as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.

*Fee Authorization.* Applicant believes NO fee is due. However, in the event a fee is found to be due, the Commissioner is hereby authorized to charge Deposit Account No. 50-0574 (Docket No. NTI-023-1D).

Date: 10-14-03

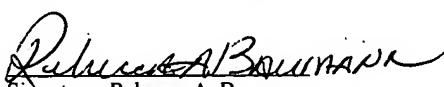
  
Signature of Practitioner

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Customer No.: 29477

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Signature: Rebecca A. Baumann

<b>INFORMATION DISCLOSURE CITATION</b>  <b>PTO-1449</b>		<b>Atty. Docket No.</b> NTI-023-1D	<b>Serial No.</b> Filed Herewith
		<b>Applicant</b> LIU, Yong	
		<b>Filing Date</b> Filed Herewith	<b>Group</b>

**U.S. PATENT DOCUMENTS**

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	4,231,811	11/4/1980	Somekh, et al.	148	1.5	9/13/1979
	4,426,584	1/17/1984	Bohlen, et al.	250	492.2	6/3/1981
	4,456,371	6/26/1984	Lin	355	71	6/30/1982
	4,812,962	3/14/1989	Witt	364	490	4/9/1987
	4,895,780	1/23/1990	Nissan-Cohen, et al.	430	5	10/25/1988
	4,902,899	2/20/1990	Lin, et al.	250	492.1	6/1/1987
	5,051,598	9/24/1991	Ashton, et al.	250	492.2	9/12/1990
	5,182,718	1/26/1993	Harafuji, et al.	364	490	3/29/1990
	5,208,124	5/4/1993	Sporon-Fiedler, et al.	430	5	3/19/1991
	5,241,185	8/31/1993	Meiri, et al.	250	492.2	1/8/1992
	5,242,770	9/7/1993	Chen, et al.	430	5	1/16/1992
	5,256,505	10/26/1993	Chen, et al.	430	5	8/21/1992
	5,326,659	7/5/1994	Liu, et al.	430	5	3/5/1992
	5,340,700	8/23/1994	Chen, et al.	430	312	11/3/1993
	5,432,714	7/11/1995	Chung, et al.	364	525	9/2/1994
	5,447,810	9/5/1995	Chen, et al.	430	5	2/9/1994
	5,498,579	3/12/1996	Borodovsky, et al.	437	250	6/8/1994
	5,553,273	9/3/1996	Liebmann	395	500	4/17/1995
	5,553,274	9/3/1996	Liebmann	395	500	6/6/1995
	5,572,598	11/5/1996	Wihl, et al.	382	144	2/25/1994
	5,631,110	5/20/1997	Shioiri, et al.	430	5	6/5/1995
	5,636,002	6/3/1997	Garofalo	355	53	10/31/1995
	5,657,235	8/12/1997	Liebmann, et al.	364	474.24	5/3/1995

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		<b>Filing Date</b> Filed Herewith	<b>Group</b>

**U.S. PATENT DOCUMENTS**

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	5,663,017	9/2/1997	Schinella, et al.	430	5	6/7/1995
	5,663,893	9/2/1997	Wampler, et al.	364	491	5/3/1995
	5,682,323	10/28/1997	Pasch, et al.	364	491	3/6/1995
	5,705,301	1/6/1998	Garza, et al.	430	5	2/27/1996
	5,707,765	1/13/1998	Chen	430	5	5/28/1996
	5,723,233	3/3/1998	Garza, et al.	430	5	2/27/1996
	5,740,068	4/14/1998	Liebmann, et al.	364	489	5/30/1996
	5,766,806	6/16/1998	Spence	430	5	9/9/1996
	5,795,688	8/18/1998	Burdorf, et al.	430	30	8/14/1996
	5,801,954	9/1/1998	Le, et al.	364	488	4/24/1996
	5,804,340	9/8/1998	Garza, et al.	430	5	12/23/1996
	5,815,685	9/29/1998	Kamon	395	500	9/15/1995
	5,821,014	10/13/1998	Chen, et al.	430	5	2/28/1997
	5,825,647	10/20/1998	Tsudaka	364	167.03	3/12/1996
	5,827,623	10/27/1998	Ishida, et al.	430	5	10/30/1996
	5,847,959	12/8/1998	Veneklasen, et al.	364	468.28	1/28/1997
	5,862,058	1/19/1999	Samuels, et al.	364	491	5/16/1996
	5,863,682	1/26/1999	Abe, et al.	430	30	2/21/1997
	5,879,844	3/9/1999	Yamamoto, et al.	430	30	12/20/1996
	5,885,734	3/23/1999	Pierrat, et al.	430	5	8/15/1996
	5,900,338	5/4/1999	Garza, et al.	430	5	8/15/1997
	5,958,635	9/28/1999	Reich, et al.	430	30	10/20/1997
	5,972,541	10/26/1999	Sugasawara, et al.	430	5	3/4/1998

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	5,994,002	11/30/1999	Matsuoka	430	5	9/4/1997
	6,007,310	12/28/1999	Jacobsen, et al.	417	362	5/23/1997
	6,009,250	12/28/1999	Ho, et al.	395	500.06	9/30/1997
	6,009,251	12/28/1999	Ho, et al.	395	500.06	9/30/1997
	6,011,911	1/4/2000	Ho, et al.	395	500.06	9/30/1997
	6,077,310	6/20/2000	Yamamoto, et al.	716	19	1/29/1999
	6,078,738	6/20/2000	Garza, et al.	395	500.22	5/8/1997
	6,081,658	6/27/2000	Rieger, et al.	395	500.22	12/31/1997
	6,081,659	6/27/2000	Garza, et al.	395	500.22	4/26/1999
	6,114,071	9/5/2000	Chen, et al.	430	5	4/6/1998
	6,289,499	9/11/2001	Rieger, et al.	716	21	1/7/2000
	6,171,731 B1	1/9/2001	Medvedeva, et al.	430	5	1/20/1999
	6,249,597 B1	6/19/2001	Tsudaka	382	144	12/17/1998

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	5,282,140	1/25/1994	Tazawa; et al.	364	468	6/24/1992
	6,014,456	1/11/2000	Tsudaka	382	144	7/15/1996
	6,154,563	11/28/2000	Tsudaka	382	144	12/17/1998
	6,225,025 B1	5/1/2001	Hoshino	430	296	9/22/1998
	6,298,473 B1	10/2/2001	Ono, et al.	716	21	12/3/1998
	6,339,836 B1	1/15/2002	Eisenhofer, et al.	716	5	8/24/1998
	6,453,457 B1	9/17/2002	Pierrat, et al.	716	19	9/29/2000
	2002/0076622 A1	6/20/2002	Pierrat, et al.	430	5	12/20/2000
	2002/0100004 A1	7/25/2002	Pierrat, et al.	716	5	3/15/2002

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		Filing Date Filed Herewith	Group

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EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
	5,991,006	11/23/0199	Tsudaka	355	53	10/27/1997
	6,016,357	1/18/2000	Neary, et al.	382	144	6/16/1997
	6,091,845	7/18/2000	Pierrat, et al.	382	144	2/24/1998
	6,272,236	8/7/2001	Pierrat, et al.	382	144	7/18/2000
	6,243,855 B1	6/5/2001	Kobayashi, et al.	716	19	9/29/1998
	2002/0019729 A1	2/14/2002	Chang, et al.	703	6	8/7/1998
	2002/0035461 A1	3/21/2002	Chang, et al.	703	13	7/16/2001

6,183,916	2/06/2001	Kuo et al.	430	5	9/13/1999
6,425,117	7/23/2002	Pasch et al.	716	21	9/29/1997

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**FOREIGN PATENT DOCUMENTS**

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	WO 00/36525 A2	6/22/2000	WO			<input type="checkbox"/>	<input type="checkbox"/>
3-80525		4/5/1991	JP			<input type="checkbox"/>	<input type="checkbox"/>
	WO 00/67074 A1	11/9/2000	WO			<input type="checkbox"/>	<input type="checkbox"/>
	WO 00/67075 A1	11/9/2000	WO			<input type="checkbox"/>	<input type="checkbox"/>
	WO 00/67076 A1	11/9/2000	WO			<input type="checkbox"/>	<input type="checkbox"/>
	2,324,169 A	10/14/1998	GB			<input type="checkbox"/>	<input type="checkbox"/>
	3-210560	9/13/1991	JP			<input type="checkbox"/>	<input type="checkbox"/>
	8-236317	9/6/1996	JP			<input type="checkbox"/>	<input type="checkbox"/>
	WO 99/47981	9/23/1999	WO			<input type="checkbox"/>	<input type="checkbox"/>
	10-133356	5/22/1998	JP			<input type="checkbox"/>	<input type="checkbox"/>
	11-143085	5/28/1999	JP			<input type="checkbox"/>	<input type="checkbox"/>

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	LIU, Yong						
	<b>Filing Date</b>	<b>Group</b>					
	Filed Herewith						
<b>FOREIGN PATENT DOCUMENTS</b>							
<b>EXAMINER'S INITIALS</b>	<b>PATENT NO.</b>	<b>DATE</b>	<b>COUNTRY</b>	<b>CLASS</b>	<b>SUBCLASS</b>	<b>TRANSLATION</b>	
						<input type="checkbox"/> YES	<input type="checkbox"/> NO
	WO 99/14706 A2/A3	3/25/1999	WO			<input type="checkbox"/>	<input type="checkbox"/>

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		<b>Filing Date</b> Filed Herewith	<b>Group</b>
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>			
EXAMINER'S INITIALS	CITATION		
	Ackmann, P., et al., "Phase Shifting and Optical Proximity Corrections to Improve CD Control on Logic Devices in Manufacturing for Sub 0.35 um I-Line", Advance Micro Devices (8 pages).		
	Chen, J.F., et al., "Optical Proximity Correction for Intermediate-Pitch Features Using Sub-Resolution Scattering Bars", MicroUnity Systems Engineering, Inc., Sunnyvale, California, pp. 1-16.		
	Chen, J.F., et al., "Practical Method for Full-Chip Optical Proximity Correction", MicroUnity Systems Engineering, Inc., Sunnyvale, California (14 pages).		
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	Precim, "Proxima System", Precim Company, Portland, Oregon (2 pages).		
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	Sturman, J., et al., "Spatial Filter Models to Describe IC Lithographic Behavior", Precim Corporation, Portland, Oregon (10 pages).		
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	Lucas, K., et al., "Model Based OPC for 1st Generation 193nm Lithography", Motorola Inc., IDT assignee to IMEC (12 pages).		
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**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)**

EXAMINER'S INITIALS	CITATION
	Sugawara, M., et al., "Practical Evaluation of Optical Proximity Effect Correction by EDM Methodology", Sony Corporation (11 pages).
	Granik, Y., et al., "MEEF as a Matrix", Mentor Graphics Corporation (11 pages).
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	Adam, K., et al., "Simplified Models for Edge Transitions in Rigorous Mask Modeling", University of California Berkeley (40 pages).
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	Trans Vector, "Now Better Quality Photomasks", Trans Vector Technologies, Inc., Camarillo, California (4 pages).
	Saleh, B., et al., "Reduction of Errors of Microphotographic Reproductions by Optimal Corrections of Original Masks", Optical Engineering, Vol. 20, No. 5, pp. 781-784, September/October 1981.
	Mathur, B.P., et al., "Quantitative Evaluation of Shape of Image on Photoresist of Square Apertures", IEEE, Transactions On Electron Devices, Vol. 35, No. 3, pp. 294-297, March 1988.
	Lin, B.J., "Methods to Print Optical Images at Low-k Factors", SPIE, Optical/Laser Microlithography III, Vol. 1264, pp. 2-13 (1990).

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**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)**

EXAMINER'S INITIALS	CITATION
	Henke, W., et al., "A Study of Reticle Defects Imaged Into Three-Dimensional Developed Profiles of Positive Photoresist Using the Solid Lithography Simulator", Microelectronics Eng., Vol. 14, pp. 283-297 (1991).
	Wiley, J., et al., "Phase Shift Mask Pattern Accuracy Requirements and Inspection Technology", SPIE, Integrated Circuit Metrology, Inspection, And Process Control V, Vol. 1464, pp. 346-355 (1991).
	Fu, C.C., et al., "Enhancement of Lithographic Patterns by Using Serif Features", IEEE, Transactions On Electron Devices, Vol. 38, No. 12, pp. 2599-2603, December 1991.
	Ohtsuka, H., et al., "Phase Defect Repair Method for Alternating Phase Shift Masks Conjugate Twin-Shifter Method", Jpn. J. Appl. Phys., Vol. 31, pp. 4143-4149 (1992).
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	Garofalo, J., et al., "Automatic Proximity Correction for 0.35um I-Line Photolithography", IEEE, pp. 92-94 (1994).
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